TECHNICAL NOTES

LAKE STATES FOREST EXPERIMENT STATION
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Costs of Chemical Debarking of Oak in Lower Michigan

Experience with chemical debarking of oak in the Lake States is limited. The information obtained on costs from an experiment in Lower Michigan should be of interest because of the increasing use of hardwoods for pulp. The work was done cooperatively with the American Box Board Company in July 1955.

The oak stand under study consisted of 10 acres of mixed northern pin and white oak, 50 to 65 years of age; the site was formerly occupied by pine. The merchantable portion of the stand (trees 5.0 inches in diameter and larger) averaged 136 trees with 54 square feet of basal area and a volume of 10.4 cords per acre. The sparse sapling understory averaged 250 to 300 stems and a basal area of 11 to 13 square feet per acre.

All merchantable trees were girdled at stump height with single-bitted axes by cutting two frills into the bark and then bumping off the bark with the back of the axe. The distance between the two frills was equal to the diameter at breast height. The exposed wood surface was painted with a 40 percent solution of sodium arsenite, which was carried in a minnow bucket and applied with a 4-inch brush.

Three axemen and one man applying chemical worked 115 man-hours and used 9 gallons of sodium arsenite to treat 1,362 trees. The total volume of the trees was 103.5 rough cords. This is equivalent to 151 trees or 11.5 rough cords per gallon. Costs for the operation were as follows:

Item	Total cost	Cost per cord
1 man applying chemical for 28.86 hours at $1.65 per hour	$ 47.62	$ 0.46
3 axemen for 86.57 hours at $1.30 per hour	112.54	1.09
9 gallons sodium arsenite at $2.11 per gallon	18.99	.18
Total cost	$ 179.15	$ 1.73

These costs appear high when compared with the $0.70 to $0.90 per cord reported for conifers in the Northeast,[1/] but are comparable when allowances are made for differing labor rates and tree volumes. With adjustments for Northeastern labor rates of $1.25 and $1.00 per hour and for the one-third less volume in short-boled oak as compared with conifers or aspen, a cost of $0.91 per cord is obtained.

The soft fibrous bark of white oak is more difficult to remove than that of northern pin oak, but treating costs per cord (see table on reverse side) depend primarily on the merchantable height-diameter ratio of the trees treated.

1/ Personal communication from H. Sheppard, Lake States Logging Engineer, American Pulpwood Association.

PAUL C. GUILKEY, Research Forester
Lower Peninsula Forest Research Center
ROWLAND W. BLAIR, Chief Forester
American Box Board Company

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MAINTAINED AT ST. PAUL 1, MINNESOTA, IN COOPERATION WITH THE UNIVERSITY OF MINNESOTA

Estimated costs of chemical debarking of oak

Average number of 8-foot bolts per tree[1/]	Averages per cord		
	Labor	Sodium arsenite	Cost[2/]
	Man-hours	Gallons	Dollars
2	1.34-1.42	0.105-.111	2.08-2.19
3	.99-1.12	.077-.087	1.53-1.73
4	.77- .88	.060-.068	1.19-1.35

1/ The average merchantable heights are for trees 8.0 to 10.0 inches in d.b.h. Utilization is to a usable top not less than 4.0 inches d.i.b.

2/ Labor costs assume 3 axemen at $1.30 per hour and one man applying chemical at $1.65 per hour. Sodium arsenite costs are $2.11 per gallon.